BIOTIC COMMUNITIES



The White River watershed contains one of the most diverse assemblages of fish species in the state of Missouri or Arkansas. There have been 163 native fish species identified in the entire White River basin and 110 fish species identified in the White River watershed (Shirley 1992). There have been 86 fish species identified in the Missouri portion of the watershed and 97 species of fish identified in the Arkansas portion (Table BC01). The Missouri portion of the watershed lies entirely in the Ozark-White Division, a division of the larger Ozark Aquatic Faunal region. There are 56 species or subspecies of fish which have a localized distribution in the watershed or a limited distribution elsewhere in the state. The species or subspecies which are restricted to the Ozark-White Division include: Ozark bass, duskystripe shiner, White River or Arkansas saddled darter, and yoke darter. Each of these species has been collected previously in the watershed. Four races or subspecies in the watershed are found elsewhere in the state, but have a morphological distinction in the White River region which make them unique to the Ozark-White Division; they may represent geographic races or undescribed subspecies. These species are longear sunfish, rainbow darter, fantail darter, and orangethroat darter (Pflieger 1989). The watershed also contains a diverse and somewhat unique array of mussels (38 known species) and crayfish (8 known species in Missouri).

FISH COMMUNITY DATA

Fish collections have been made throughout the Missouri portion of the watershed since 1940 (Table BC02, Figure BC01). There have been 81 fish species collected since that time. In 1997, twenty-one fish collections were made by MDC's Southwest Region Fisheries staff; seventeen from William Pflieger's historic collection sites and four from previously unsampled locations. In 1998 additional effort was added at eleven of these locations, and four more historic sites were

sampled. Evaluations of fish populations were done on twenty-one of the sites that had not been sampled for at least ten years or that had not been sampled previously. There were 6,788 fish collected or otherwise identified from these combined efforts, consisting of forty-seven species, representing ten families. Table BC03 lists fish species by stream for the Missouri portion of the watershed.

The families represented by recent samples in descending order of number of species were: Cyprinidae (16 species), Percidae and Centrarchidae (8 species each), Catostomidae and Ictaluridae (4 species each), Fundulidae and Cottidae (2 species each), and Atherinidae, Salmonidae, and Poeciliidae (1 species each).

Duskystripe shiners and stoneroller species (stoneroller species included central and largescale stonerollers) were the most widespread species sampled overall, found at all twenty-one sites. Several other species occurred at over one-half of the sample sites including: rainbow darters (20 sites) orangethroat darters (17 sites), northern studfish (17 sites), northern hogsuckers (16 sites), Ozark minnows (15 sites), and blackspotted topminnows and longear sunfish (14 sites each).

Duskystripe shiners were the most numerous species sampled making up 23% of the total watershed sample for the current season, followed by stoneroller species (16.7%) and Ozark minnows (12.2%) These three fishes made up 52% percent of all fish sampled for the 1997-98 season.

Species occurring rarely throughout the current watershed samples, those sampled at two or less sites, included: yellow bullhead, White River saddled darter, checkered madtom, brook silverside, creek chubsucker, western mosquitofish, Ozark chub, and bigeye shiner (1 site each) and white sucker, rainbow trout, spotted bass, and creek chub (2 sites each).

The most widespread large fishes in descending order were: northern hogsuckers (16 sites), longear sunfish (14 sites), smallmouth bass (11 sites), largemouth bass (10 sites), and Ozark bass and green sunfish (7 sites each). The most widespread nektonic, or midwater species, sampled were duskystripe shiners and stoneroller species (all sites), northern studfish (17 sites), Ozark minnows (15 sites), blackspotted topminnows (14 sites), horneyhead chubs (13 sites), and roseyface and striped shiners (11 sites each). The most widespread benthic, or bottom dwelling, species were: rainbow darters (20 sites), orangethroat darters (17 sites), Ozark madtoms (13 sites), banded sculpins (10 sites), greenside darters (9 sites), and slender madtoms and golden fantail darters (8 sites each).

The number of species per site (Table BC02) varied from thirty species sampled at site 1986 on Beaver Creek to ten species sampled at sites 2506 on Bull Creek and 2183 on Cowskin Creek. The average number of species sampled from the twenty-one sites was 19.3.

Creek chubsuckers had not been collected from the watershed since 1940. They were sampled at one location in Swan Creek. One creek chubsucker was recently collected from Little North Fork

White River during 1998. White River saddled darters had not been collected in the watershed since 1968 and were thought to be extirpated or nearly extirpated (Pflieger 1997). One individual was collected from lower Beaver Creek during 1998.

Many of the species originally found in the watershed have not been collected in the watershed since 1946. Four species have not been collected since 1973; grass pickerel, red spotted sunfish, steelcolor shiner, and speckled darter. Species that are known to have experienced declines in the watershed, thought to be as a result of reservoir construction, include: steelcolor shiner, Ozark chub, duskystripe darter, silver chub, bigeye chub, wedgespot shiner, White River saddled darter, Ozark shiner, and longnose darter (Pflieger 1997).

For many of the species missing from recent collections, inadequate sampling or sampling error could be factors in their absence. Large species are difficult to seine and easily avoid seine hauls. Since electrofishing has not been used as a sample technique in the recent collections, this could be the explanation for the absence of the larger fish species. In addition, sites on the White River proper were not sampled due to impounded waters. The larger species would be more likely found in these areas than in the smaller tributaries. However, sampling error alone may not be the only reason for the absence of the highfin carpsucker, since it is listed as a rare species in Missouri.

For the smaller fish, sampling error could be a possibility for their absence. It is more probable, however, that some of the species have been lost from the watershed. For example, the longnose darter is listed as a state endangered species, and it has not been seen in collections from the Missouri portion of the watershed since the mid-1950s. In addition, the eastern slim minnow is a state listed rare species and has not been collected since before 1946. The gilt darter and silver chub, though not state listed species, have also not been collected since before 1946. It is unlikely that sampling error is the reason for the absence of these species in collections. Habitat loss and fragmentation due to the construction of Powersite (1913) and Table Rock (1957) dams could have played a major role in the absence of these smaller species from collections and from the watershed.

The construction of major dams and reservoirs has created a barrier to fish movement in the watershed. As populations become isolated, genetic variability may become reduced and fragmented. Though this process happens over centuries, the mechanisms for the change are in place. This has the potential to not only separate populations physically but also to isolate populations genetically. The result is isolated populations with fewer individuals or genetic drift, where genetic diversity of a new generation becomes different from that of a previous generation. Traits that once were developed from a watershed-wide gene pool, in some instances, have now become isolated from one another. In turn, the genetic variation in the two isolated populations may differ from one another. The possibility now exists for fitness reductions in isolated populations resulting from these isolations as fewer gene types are exchanged and passed on to later generations.

AQUATIC INVERTEBRATES

This watershed contained a very diverse mussel fauna in the past. Historically, there were 38 species of mussels collected (Table BC04). The majority of these came from the mainstem White River which is now impounded (Gordon 1980; 1982 and Oesch 1996). Since 1920 only 9 species of mussels, 7 live specimens and 2 dead shells, have been sampled in the watershed. These were collected from Bull, Swan, and Beaver creeks (Buchanan 1996). The main factor for these losses, especially the mainstem populations, has been the impoundment of the White River. Species diversity in tributary streams may be limited naturally by stream size, water temperature, and high gradients. Several mussel species have been observed in Table Rock and Bull Shoals lakes by SCUBA divers. These are included in Table BC04.

The Ozark Region supports by far the greatest variety of crayfish found in Missouri. This faunal richness is a result of diverse aquatic habitats, very slow and ancient geological development, and the fact that this region remained undisturbed during glaciation. In addition, the White River watershed has several unique crayfish species (Table BC05) (Pflieger 1996). Longpincered crayfish are restricted to the White River basin in Missouri and Arkansas. Meek's crayfish are restricted to northwest Arkansas and southwest Missouri. In Missouri they have only been collected at three locations in tributaries to Table Rock Lake. Meek's crayfish is considered one of the rarest crayfish in Missouri. The Ozark crayfish is only found in the White and Black river basins in Missouri and Arkansas. William's crayfish has a very localized distribution, only occurring in the White River watershed in Missouri and Arkansas (Pflieger 1996).

A detailed water quality study of Prairie, Cowskin, and Beaver creeks was conducted by Duchrow (1976; 1978) following ongoing pollution problems. The study used aquatic invertebrates as an indicator of pollution entering Prairie Creek from the Ava area. Both qualitative and quantitative studies were done on invertebrate populations, and a species list is presented in (Table BC06).

Many amphibians and reptiles, as well as birds and mammals, are dependent on aquatic habitats, and some spend portions or all of their life in or near the water. Amphibians and reptiles found in the Missouri watershed counties are listed in (Table BC07).

SPECIES OF CONSERVATION CONCERN

The White River watershed has a very unique distribution of flora and fauna. There are one-hundred and fifty-two watershed species identified as being of conservation concern (Table BC08). Six federally endangered species are known to occur in the watershed including: Swainson's warbler, gray bat, and Indiana bat in Missouri and Arkansas; running buffalo clover in Missouri; and Ozark big-eared bat and Florida panther in Arkansas. One federally threatened species, Ozark cavefish, is known from the Arkansas portion of the watershed. There is one federal candidate species, the Tumbling Creek cavesnail, found in the Missouri portion of the watershed.

Fish

Checkered madtom is Missouri listed as rare and uncommon (S3). This best describes their presence in the watershed. Only one checkered madtom was collected during recent samples. Checkered madtoms have been present in low numbers in samples from every decade sampled beginning in 1940. Pflieger (1997) indicates that checkered madtoms may be declining in the White River system.

Ozark shiner is Missouri listed as imperiled because of rarity making them vulnerable to extirpation from the state. One Ozark shiner was sampled at a location in Beaver Creek in 1992. They had not been sampled in the watershed previous to that since 1946. Once listed as abundant from the White River drainage, its numbers are thought to have been reduced due to reservoir construction, resulting in habitat loss and range fragmentation (Pflieger 1997).

Longnose darter is currently Missouri listed as critically imperiled because of extreme rarity and especial vulnerability to extirpation from the state (S1). Longnose darters have not been sampled from the Missouri portion of the watershed since the mid-1950s. The area where longnose darters were formerly sampled is now impounded by Table Rock Dam, and this species is thought to be extirpated from the Missouri portion of the watershed. Longnose darters have been collected from the Arkansas portion of the watershed as recently as 1987. Range of the longnose darter has also been negatively impacted by the inundations of Beaver Lake (Robison and Buchanan 1992).

Eastern slim minnow is Missouri listed as imperiled because of rarity making them vulnerable to extirpation from the state (S2). Eastern slim minnows have not been sampled in the Missouri portion of the watershed since 1942 and are thought to have been extirpated in part due to reservoir construction (Pflieger 1997).

Highfin carpsucker is Missouri listed as S2. Highfin carpsuckers are known to exist in Lake Taneycomo but are becoming less common statewide with most occurrence records more than 25 years old (Pflieger 1997).

Ozark cavefish is listed as federally threatened and has not been found in the Missouri portion of the watershed; several populations are known to exist in the James River watershed, a White River tributary. Two populations are known to exist in the Arkansas portion of the watershed in Benton County. One population was found in a private sinkhole in 1991, which has since been filled in; that population's status is unknown. The other population was discovered when workers constructing a pond accidentally broke through the ceiling of a cave. Ozark cavefish were last sampled at that location in 1987 (Osborne, C., AR Natural Heritage Commission, pers. comm.).

Crystal darter is listed in Arkansas as imperiled because of rarity making it vulnerable to extirpation from the state. A single crystal darter was collected from War Eagle Creek in 1964. A voucher specimen is housed at the University of Arkansas, Little Rock (Osborne, C., AR Natural Heritage Commission, pers. comm.). Robison and Buchanan (1992) list the crystal darter's range as below the Fall Line in the White River Basin, and do not recognize this collection on reference maps.

Bluntface shiner is Arkansas listed as historical, and one individual was collected from War Eagle Creek in 1964. The specimen is housed at the University of Arkansas, Little Rock (Osborne, C., AR Natural Heritage Commission, pers. comm.). Robison and Buchanan (1992) do not recognize this collection, stating that bluntface shiners have only been collected at four locations, outside the watershed, and prior to 1960.

American brook lamprey is Arkansas listed as imperiled because of rarity making it vulnerable to extirpation from the state. The American brook lamprey is only known from the White River basin in Arkansas and has been collected in the lower section of the watershed below Bull Shoals Lake (Robison and Buchanan 1992).

Crayfish

Meek's crayfish is Missouri listed as critically imperiled because of extreme rarity and is especially vulnerable to extirpation from the state (S1). Meek's crayfish are only known from southern Missouri and northwestern Arkansas, and have only been collected from a few tributaries to Table Rock Lake in Stone and Taney counties in Missouri. They are one of the rarest known crayfish in Missouri (Pflieger 1996).

William's crayfish is Missouri listed as critically imperiled because of extreme rarity, and it is especially vulnerable to extirpation from the state (S1). This crayfish has a very localized distribution in the upper White River watershed, in Missouri and Arkansas. In Missouri it is known from Barry, Christian, Stone, and Taney counties. It is found in close association with Meek's crayfish (Pflieger 1996).

Mollusks

Tumbling Creek cavesnail is Missouri listed as critically imperiled because of extreme rarity and it is especially vulnerable to extirpation from the state (S1). It is also a federal candidate species. The snail is only known from a single stream in Tumbling Creek Cave in Taney County, MO (Gordon, Oesch, and Wu 1997).

Purple lilliput is Missouri listed as imperiled because of rarity making it vulnerable to extirpation from the state. It is rare in Missouri, only known from the southern part of the state, and may have been extirpated from the James River, a White River tributary,

due in part to water pollution (Oesch 1995).

ANGLER SURVEY DATA

MDC has collected angler survey data on Table Rock Lake, Bull Shoals Lake, and Lake Taneycomo. Summaries from Table Rock Lake and Lake Taneycomo are available in various annual reports from the SW Regional Office in Springfield, and information concerning Bull Shoals Lake is available from the Ozark Regional Office in West Plains.

FISH INTRODUCTIONS

The types and number of fishes that have been introduced into the watershed has varied over time. The most notable stockings have been of salmonid species below the three large dams. The stocking of trout species first began in the Missouri portion of the watershed in 1880 when rainbow trout were released into streams along the Frisco Railroad. The first documented release of non-native fishes into the watershed was during 1903-04, when brook trout and grayling were released into the White River. Trout stocking occurred indiscriminately and sporadically, throughout the watershed, from the early 1900s until 1936. Missouri initiated organized management of a trout program in 1937, shortly after the formation of MDC. Stocking at Roaring River Spring was first recorded in 1929, and daily trout tags were first sold in 1937 (Turner 1979).

Trout were first stocked in Lake Taneycomo in 1922, but did not become established until the lake became a coldwater fishery in 1958. In the period from 1958-78, 6,000,000 trout, mostly rainbow trout, were stocked in Lake Taneycomo. Recent rainbow trout stockings have averaged about 750,000 per year. Brown trout were first introduced to Lake Taneycomo in 1980. Recent brown trout stockings have averaged 10,000 to 15,000 per year.

Kokanee salmon were stocked in Lake Taneycomo from 1963 to 1968. Survival and catch rates of kokanee were low, and the stocking was discontinued. Steelhead trout (migratory strains of rainbow trout) were stocked from 1971 to 1974, but stockings were discontinued because of the possibility of disease introductions (Kruse 1996).

Paddlefish occur naturally in the lower White River basin and occasionally strayed as far as the Missouri portion of the watershed prior to the construction of Bull Shoals Dam. MDC began stocking paddlefish in Table Rock Lake in 1972. From the initial stocking until 1998, nearly 189,000 fingerling paddlefish were stocked in Table Rock Lake. This is the first known successful development of a paddlefish population from stocked fingerlings (Graham, L., MDC, pers. comm.). Paddlefish migrate annually from Table Rock Lake into tributary streams in an effort to spawn, although no successful spawning has been documented. Many of the fish move up the James River Arm and a popular sport fishery has developed. Paddlefish also congregate annually below Beaver Dam.

Numerous small lakes and ponds, throughout the watershed, have been stocked with a variety of fish including largemouth bass, bluegill, grass carp, crappie, and channel catfish. Several complaints have been received about the escapement of Koi carp from an impoundment on Sugar Camp Creek. Several Koi carp were known to escape when the dam failed in the late 1980s. An investigation of the site in 1994 found the dam to be sound, and Koi carp unable to escape under normal conditions (Hash K., MDC memo, 1995). Goldfish were sampled from Swan Creek, the stream Sugar Camp Creek flows into, in 1995. Escapement of stocked fish from impounded waters undoubtedly occurs, but the extent and effects are undocumented.

AG&FC stocked 2.8 million trout statewide in 1997 and plannned to stock 2.85 million trout in 1998, both record numbers for those years. In the period from 1987 to March 1998 rainbow trout were the most common and numerous fish stocked by AG&FC in the watershed, followed by brown trout, cutthroat trout, channel catfish, and brook trout. Most trout, in the Arkansas portion of the watershed, are stocked below Beaver and Bull Shoals dams. Exotic introductions (non-native to U.S. waters) to Arkansas waters include: brown trout, goldfish, grass carp, and common carp. Transplanted introductions (non-native to Arkansas) include: rainbow trout, cutthroat trout, brook trout, lake trout, northern pike, muskellunge, and striped bass.

FISHING REGULATIONS

Statewide fishing regulations apply to most streams in the watershed. Special regulations may apply on certain water bodies. Missouri regulations can be found in the Wildlife Code Book which runs annually from March 1 through the last day of February.

THREATS TO AQUATIC POPULATIONS

Urbanization - Expanding human populations are and will continue to be a threat to aquatic communities in the watershed. As more people migrate into the watershed, more land is cleared for development and roads. Forests make way for yards and parking lots, allowing for more rapid runoff and increased sedimentation. Population increases are responsible for larger loads on municipal sewage systems, more onsite septic systems, and related spills and nutrient loading. Water use will also increase with growing populations.

Point and nonpoint source pollution - Pollution incidents associated with expanding populations in the watershed have the potential to negatively impact aquatic biota. Since 1985 municipal sewage (11) and chemical (11) spills, combined, have accounted for 68% of the recorded pollution incidents in the Missouri portion of the watershed. The three most recently recorded pollution incidents in the Missouri portion of the watershed have all been caused when municipal sewage reached watershed streams. Two of these were responsible for a total of 5,584 known fish being killed.

Livestock - Livestock in the watershed in the form of cattle on pasture and poultry houses have the potential to impact aquatic biota. Manure from both sources has the potential to reach

watershed streams in substantial amounts. Manure also has the potential to degrade watershed streams over time. Cattle in streams can also negatively impact aquatic life by destroying riparian vegetation and compacting streambanks, which in turn may increase the amount of erosion and waste that enters streams.

Gravel removal - Results from a recent study from the Arkansas Cooperative Fish and Wildlife Research Unit at the University of Arkansas indicate that instream gravel removal significantly degrades the quality of Ozark stream ecosystems. The study compared sites above, at, and below gravel operations and found that at and downsteam from gravel mines, stream channel form was altered, resulting in an increase in sedimentation rates and turbidity, shallower and larger pools, and fewer riffles. The resultant extensive flats favored large numbers of a few small fish species. The removal of riparian vegetation, large woody debris, and large substrate particles resulted in smaller invertebrates and smaller fish at disturbed and downstream sites. The study found that silt-free substrate is a valuable resource to Ozark stream biota, and alteration of physical habitat appears to have a greater influence on the biotic community than limitations imposed on other resources, such as food (Brown and Lyttle 1992).

Reservoir operations - Waters with low dissolved oxygen concentrations are released seasonally from Beaver, Table Rock, and Bull Shoals lakes, impacting downstream fish and invertebrate populations. In addition, artificially low flows and rapidly fluctuating releases from Table Rock Dam affect instream habitats in the upper reaches of Lake Taneycomo. Seasonal inundation of lower reaches of tributary streams also has a negative impact on the total amount of available riverine habitat.

Table BC01. Fishes of the White River watershed.

Common name	Scientific name	MO* status	AR** status
Chestnut lamprey	Ichthyomyzon castaneus		A,B
Larval lamprey	Ichthyomyzon	A	
Southern brook lamprey	Icthyomyzon gagei		В
Least brook lamprey	Lampetra aepyptera	C	
American brook lamprey	Lampetra appendix		В
Paddlefish	Polyodon spathula	A, C, D	A, B
Shovelnose sturgeon	Scaphirhynchus platorynchus	В	В
Longnose gar	Lepisosteus osseus	A, B, D	A, B
Shortnose gar	Lepisosteus platostomus	A	
American eel	Anguilla rostrata	A, B	A, B
Gizzard shad	Dorosoma cepedianum	A, B, D	A, B
Threadfin shad	Dorosoma petenense	B, C, D	В
Mooneye	Hiodon tergisus	A	В
Cutthroat trout	Salmo clarki		В
Rainbow trout	Oncorhynchus mykiss	A, B, C, D	A, B
Brown trout	Salmo trutta	B, C, D	В
Brook trout	Salvelinus fontinalis		В
Lake trout	Salvelinus naymacush		В
Grass pickerel	Esox americanus	A, B	В
Northern pike	Esox lucius		В
Muskellunge	Esox masquinongy		В
Central stoneroller	Campostoma pullum	A, B, C, D	A, B
Largescale stoneroller	Campostoma oligolepis	A, B, C, D	A, B
Goldfish	Carassius auratus	D	В
Grass carp	Ctenopharyngodon idella		В
Common carp	Cyprinus carpio	A, B, C, D	В
Bigeye chub	Notropis amblops	A, B, C, D	A, B
Streamline chub	Hybopsis dissimilis		В
Gravel chub	Erimystax x-punctatus		A
Horneyhead chub	Nocomis biguttatus	A, B, C, D	A, B
Golden shiner	Notemigonus crysoleucas		В
Bigeye shiner	Notropis boops	A, B, C, D	A, B
Striped shiner	Luxilus chrysocephalus	A, B, C, D	A, B
Whitetail shiner	Cyprinella galactura	A, B, C, D	A, B
Wedgespot shiner	Notropis greenei	A, B, C, D	A, B
Ozark minnow	Notropis nubilus	A, B, C, D	A, B
Ozark shiner	Notropis ozarcanus	A, D	A, B
Duskystripe shiner	Luxilus pilsbryi	A, B, C, D	A, B
Cardinal shiner	Luxilus cardinalis		A
Rosyface shiner	Notropis rubellus	A, B, C, D	A, B

Table BC01. Fishes (continued).

Telescope shiner Notropis telescopus A, B, C, D A, B Steelcolor shiner Notropis whipplei A, B A, B Southern redbelly dace Phoxinus erythrogaster A, B, C, D A, B Bluntnose minnow Pimephales notatus A, B, D A, B Fathead minnow Pimephales notatus A, B, D A, B Slim minnow Pimephales tenellus A, B Slim minnow Pimephales tenellus A, B Eastern slim minnow Pimephales tenellus A, B, C, D Silver chub Erimystax harryi A, B, C, D Silver chub Macrhybopsis storeriana A Creek chub Semotilus atromaculatus A, C, D A, B River carpsucker Carpiodes carpio A Guillback Carpiodes velifer A, B Bigmouth buffalo Ictiobus cyprinus A, B Black buffalo Ictiobus niger A White sucker Catostomus commersoni A, C, D A, B Northern hogsucker Hypentelium nigricans A, B, C, D A, B Spotted sucker Minytrema melanops River redhorse Moxostoma carinatum A, B, C, D A, B Black redhorse Moxostoma duquesnei A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum Blue catfish Ictalurus furcatus A, B, C, D A, B Channel catfish Ictalurus furcatus A, B, C, D A, B Channel catfish Ictalurus minatis A, B, C, D A, B Checkered madtom Noturus albater A, B, C, D A, B Channel catfish Pylodicits olivaris A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Checkered madtom Noturus exilis A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Black spotted topminnow Fundulus olivaceus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Slender mosquitofish Gambusia affinis D Ba Striped bass Morone exaxtilis B, C, D B Striped bass Morone exaxtilis B, C, D B Striped bass Morone saxatilis B, C, D B Stellow perch	Common name	Scientific name	MO* status	AR** status
Southern redbelly dace Phoxinus erythrogaster A, B, C, D A, B Bluntnose minnow Pimephales notatus A, B, D A, B Fathead minnow Pimephales promelus B Slim minnow Pimephales tenellus A, B Eastern slim minnow Pimephales t. parviceps A Ozark chub Erimystax harryi A, B, C, D Silver chub Macrhybopsis storeriana A Creek chub Semotilus atromaculatus A, C, D A, B River carpsucker Carpiodes carpio A B Guillback Carpiodes cyprinus A, B B Highfin carpsucker Carpiodes velifer A, B B Bigmouth buffalo Ictiobus cyprinellus A Black buffalo Ictiobus niger A White sucker Catostomus commersoni A, C, D A, B Creek chubsucker Erimyzon oblongus A, D B Northern hogsucker Minytrema melanops B River redhorse Moxostoma carinatum A A, B, C, D A, B Golden redhorse Moxostoma duquesnei A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum Blue catfish Ictalurus furcatus A Black bullhead Ameiurus matalis A, B, C, D A, B Channel catfish Ictalurus punctatus A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender mosquitofish Amblyopsis rosae Northern studifish Fundulus catenatus A, B, C, D A, B Black spotted topminnow Fundulus olivaceus A, B, C, D A, B Blook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B Striped bass	Telescope shiner	Notropis telescopus	A, B, C, D	A, B
Bluntnose minnow Pimephales notatus A, B, D A, B Fathead minnow Pimephales promelus B S S S S S S S S S S S S S S S S S S	Steelcolor shiner	Notropis whipplei	A, B	A, B
Fathead minnow Pimephales promelus A, B Slim minnow Pimephales tenellus A, B Eastern slim minnow Pimephales t. parviceps A Ozark chub Erimystax harryi A, B, C, D Silver chub Macrhybopsis storeriana A Creek chub Semotilus atromaculatus A, C, D A, B River carpsucker Carpiodes carpio A B River carpsucker Carpiodes cyprinus A, B B Highfin carpsucker Carpiodes velifer A, B B Bigmouth buffalo Ictiobus cyprinellus A Black buffalo Ictiobus origer A White sucker Catostomus commersoni A, C, D A, B Creek chubsucker Erimyzon oblongus A, D B Northern hogsucker Mypentelium nigricans A, B, C, D A, B Spotted sucker Minytrema melanops B River redhorse Moxostoma carinatum A, B, C, D A, B Golden redhorse Moxostoma daquesnei A, B, C, D A, B Shorthead redhorse Moxostoma daquesnei A, B, C, D A, B Black bullhead Ameiurus melas A Black bullhead Ameiurus melas A Black bullhead Ameiurus melas A Sellow bullhead Ameiurus matalis A, B, D, A, B Channel catfish Ictalurus punctatus A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender madtom Noturus flavater A, B, C, D A, B Slender matom Noturus flavater A, B, C, D A, B Slender matom Noturus flavater A, B, C, D A, B Slender matom Noturus flavater A, B, C, D A, B Slender matom Noturus flavater A, B, C, D A, B Slender mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B	Southern redbelly dace	Phoxinus erythrogaster	A, B, C, D	A, B
Slim minnow Pimephales tenellus A, B Eastern slim minnow Pimephales t. parviceps A Ozark chub Erimystax harryi A, B, C, D Silver chub Macrhybopsis storeriana A Creek chub Semotilus atromaculatus A, C, D A, B River carpsucker Carpiodes carpio A Guilback Carpiodes velifer A, B Bigmouth buffalo Ictiobus cyprinuls A Black buffalo Ictiobus niger A White sucker Catostomus commersoni A, C, D A, B Northern hogsucker Hypentelium nigricans A, B, C, D A, B Spotted sucker Minytrema melanops B River redhorse Moxostoma carinatum A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum Black bullhead Ameiurus melas A Black bullhead Ameiurus punctatus A, B, C, D A, B Channel catfish Ictalurus punctatus A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Checkered madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender madtom Noturus glavater A, B, C, D A, B Slender mosquitofish Fundulus catenatus A, B, C, D A, B Slenck spotted topminnow Fundulus olivaceus A, B, C, D A, B Slenck silverside Labidesthes sicculus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Striped bass Morone chrysops A, B, C, D B	Bluntnose minnow	Pimephales notatus	A, B, D	A, B
Eastern slim minnow Pimephales t. parviceps A Ozark chub Erimystax harryi A, B, C, D Silver chub Macrhybopsis storeriana A Creek chub Semotilus atromaculatus A, C, D A, B River carpsucker Carpiodes carpio A B Guillback Carpiodes cyprinus A, B Highfin carpsucker Carpiodes velifer A, B B B Highfin carpsucker Carpiodes velifer A, B B B Highfin carpsucker Carpiodes velifer A, B B B B Highfin carpsucker Carpiodes velifer A, B B B B B Highfin carpsucker Carpiodes velifer A, B B B B B Highfin carpsucker A, B B B B B B Highfin carpsucker Carpiodes velifer A, B B B B B B B Highfin carpsucker A, B B B B B B B B B B Highfin carpsucker A, B B B B B B B B B B B B B B B B B B B	Fathead minnow	Pimephales promelus		В
Ozark chub Erimystax harryi A, B, C, D Silver chub Macrhybopsis storeriana A Creek chub Semotilus atromaculatus A, C, D A, B River carpsucker Carpiodes carpio A B Quillback Carpiodes cyprinus A, B B Highfin carpsucker Carpiodes velifer A, B B Bigmouth buffalo Ictiobus cyprinellus A Black buffalo Ictiobus niger A White sucker Catostomus commersoni A, C, D A, B Creek chubsucker Erimyzon oblongus A, D B Northern hogsucker Hypentelium nigricans A, B, C, D A, B Spotted sucker Minytrema melanops B River redhorse Moxostoma carinatum A A, B Spotted sucker Minytrema melanops B River redhorse Moxostoma duquesnei A, B, C, D A, B Black redhorse Moxostoma erythrurum A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum B Blue catfish Ictalurus furcatus	Slim minnow	Pimephales tenellus		A, B
Silver chub Macrhybopsis storeriana Creek chub Semotilus atromaculatus A, C, D A, B River carpsucker Carpiodes carpio A B Quillback Carpiodes cyprinus A, B B Highfin carpsucker Carpiodes velifer A, B B Bigmouth buffalo Ictiobus cyprinellus A Black buffalo Ictiobus niger A White sucker Catostomus commersoni A, C, D A, B Northern hogsucker Hypentelium nigricans A, B, C, D A, B Spotted sucker Minytrema melanops River redhorse Moxostoma carinatum A, B, C, D A, B Shorthead redhorse Moxostoma arrythrurum A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum Black bullhead Ameiurus melas A A B Selack bullhead Ameiurus melas A, B, C, D A, B Channel catfish Ictalurus punctatus A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Checkered madtom	Eastern slim minnow	Pimephales t. parviceps	A	
Creek chubSemotilus atromaculatusA, C, DA, BRiver carpsuckerCarpiodes carpioABQuillbackCarpiodes cyprinusA, BBHighfin carpsuckerCarpiodes veliferA, BBBigmouth buffaloIctiobus cyprinellusABlack buffaloIctiobus nigerAWhite suckerCatostomus commersoniA, C, DA, BCreek chubsuckerErimyzon oblongusA, DBNorthern hogsuckerHypentelium nigricansA, B, C, DA, BSpotted suckerMinytrema melanopsBRiver redhorseMoxostoma carinatumAA, BBlack redhorseMoxostoma duquesneiA, B, C, DA, BGolden redhorseMoxostoma aerythrurumA, B, C, DA, BShorthead redhorseMoxostoma macrolepidotumBBlue catfishIctalurus furcatusABYellow bullheadAmeiurus melasABYellow bullheadAmeiurus natalisA, B, DA, BChannel catfishIctalurus punctatusA, BAOzark madtomNoturus albaterA, B, C, DA, BSlender madtomNoturus flavaterA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BOzark cavefishAmblyopsis rosaeBNorthern studfishFundulus catenatusA, B, C, DA, BBlackspotted topminnowFu	Ozark chub	Erimystax harryi	A, B, C, D	
River carpsucker Carpiodes carpio Quillback Carpiodes cyprinus A, B B Highfin carpsucker Carpiodes velifer A, B B Bigmouth buffalo Ictiobus cyprinellus A Black buffalo Ictiobus niger A, C, D A, B Creek chubsucker Erimyzon oblongus A, D B Northern hogsucker Minytrema melanops River redhorse Moxostoma carinatum A, B, C, D A, B Black redhorse Moxostoma duquesnei A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum Blue catfish Ictalurus furcatus A, B, C, D A, B Yellow bullhead Ameiurus natalis A, B, C, D A, B Channel catfish Ictalurus gunctatus Noturus albater A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Chanlel catfish Pylodictis olivaris A, B, C, D A, B Blackspotted topminnow Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Striped bass Morone saxatilis Morone saxatilis B, C, D B	Silver chub	Macrhybopsis storeriana	A	
QuillbackCarpiodes cyprinusA, BBHighfin carpsuckerCarpiodes veliferA, BBBigmouth buffaloIctiobus cyprinellusABlack buffaloIctiobus nigerAWhite suckerCatostomus commersoniA, C, DA, BCreek chubsuckerErimyzon oblongusA, DBNorthern hogsuckerHypentelium nigricansA, B, C, DA, BSpotted suckerMinytrema melanopsBBRiver redhorseMoxostoma carinatumAA, BBlack redhorseMoxostoma duquesneiA, B, C, DA, BGolden redhorseMoxostoma macrolepidotumBBBlue catfishIctalurus furcatusABBlue catfishIctalurus melasABYellow bullheadAmeiurus malaisA, B, DA, BChannel catfishIctalurus punctatusA, BAOzark madtomNoturus albaterA, B, C, DA, BSlender madtomNoturus exilisA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BPlathead catfishPylodictis olivarisA, B, C, DA, BOzark cavefishAmblyopsis rosaeBNorthern studfishFundulus catenatusA, B, C, DA, BBlackspotted topminnowFundulus olivaceusA, B, C, DA, BWestern mosquitofishGambusia affinisDBBrook si	Creek chub	Semotilus atromaculatus	A, C, D	A, B
Highfin carpsuckerCarpiodes veliferA, BBBigmouth buffaloIctiobus cyprinellusABlack buffaloIctiobus nigerAWhite suckerCatostomus commersoniA, C, DA, BCreek chubsuckerErimyzon oblongusA, DBNorthern hogsuckerHypentelium nigricansA, B, C, DA, BSpotted suckerMinytrema melanopsBRiver redhorseMoxostoma carinatumAA, BBlack redhorseMoxostoma duquesneiA, B, C, DA, BGolden redhorseMoxostoma macrolepidotumBBlue catfishIctalurus furcatusABBlack bullheadAmeiurus melasABYellow bullheadAmeiurus natalisA, B, DA, BChannel catfishIctalurus punctatusA, BAOzark madtomNoturus albaterA, B, C, DA, BSlender madtomNoturus exilisA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BOzark cavefishAmblyopsis rosaeBNorthern studfishFundulus catenatusA, B, C, DA, BBlackspotted topminnowFundulus olivaceusA, B, C, DA, BWestern mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DB, C, DB <td>River carpsucker</td> <td>Carpiodes carpio</td> <td>A</td> <td>В</td>	River carpsucker	Carpiodes carpio	A	В
Bigmouth buffaloIctiobus cyprinellusABlack buffaloIctiobus nigerAWhite suckerCatostomus commersoniA, C, DA, BCreek chubsuckerErimyzon oblongusA, DBNorthern hogsuckerHypentelium nigricansA, B, C, DA, BSpotted suckerMinytrema melanopsBRiver redhorseMoxostoma carinatumAA, BBlack redhorseMoxostoma duquesneiA, B, C, DA, BGolden redhorseMoxostoma erythrurumA, B, C, DA, BShorthead redhorseMoxostoma macrolepidotumBBlue catfishIctalurus furcatusABBlack bullheadAmeiurus melasABYellow bullheadAmeiurus natalisA, B, DA, BChannel catfishIctalurus punctatusA, BA, BOzark madtomNoturus albaterA, B, C, DA, BSlender madtomNoturus exilisA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BOzark cavefishAmblyopsis rosaeBNorthern studfishFundulus catenatusA, B, C, DA, BBlackspotted topminnowFundulus olivaceusA, B, C, DA, BWestern mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DBStripe	Quillback	Carpiodes cyprinus	A, B	В
Black buffalo Creek chubsucker Catostomus commersoni A, C, D A, B	Highfin carpsucker	Carpiodes velifer	A, B	В
White sucker Catostomus commersoni A, C, D A, B Creek chubsucker Erimyzon oblongus A, D B Northern hogsucker Hypentelium nigricans A, B, C, D A, B Spotted sucker Minytrema melanops B River redhorse Moxostoma carinatum A, B, C, D A, B Black redhorse Moxostoma duquesnei A, B, C, D A, B Golden redhorse Moxostoma erythrurum A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum B Blue catfish Ictalurus furcatus A B Black bullhead Ameiurus melas A, B, D A, B Channel catfish Ictalurus punctatus A, B, D A, B Channel catfish Ictalurus punctatus A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D Brook silverside Labidesthes sicculus A, B, C, D B Striped bass Morone saxatilis B, C, D B	Bigmouth buffalo	Ictiobus cyprinellus	A	
Creek chubsucker	Black buffalo	Ictiobus niger	A	
Northern hogsucker Hypentelium nigricans A, B, C, D A, B Spotted sucker Minytrema melanops River redhorse Moxostoma carinatum A, B, C, D A, B Black redhorse Moxostoma duquesnei A, B, C, D A, B Golden redhorse Moxostoma erythrurum A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum B Blue catfish Ictalurus furcatus A Black bullhead Ameiurus melas A Yellow bullhead Ameiurus natalis A, B, D A, B Channel catfish Ictalurus punctatus A, B Ozark madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D B Striped bass Morone saxatilis B, C, D B	White sucker	Catostomus commersoni	A, C, D	A, B
Spotted suckerMinytrema melanopsBRiver redhorseMoxostoma carinatumAA, BBlack redhorseMoxostoma duquesneiA, B, C, DA, BGolden redhorseMoxostoma erythrurumA, B, C, DA, BShorthead redhorseMoxostoma macrolepidotumBBlue catfishIctalurus furcatusABBlack bullheadAmeiurus melasABYellow bullheadAmeiurus natalisA, B, DA, BChannel catfishIctalurus punctatusA, BA, BOzark madtomNoturus albaterA, B, C, DA, BSlender madtomNoturus exilisA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BFlathead catfishPylodictis olivarisA, B, C, DA, BOzark cavefishAmblyopsis rosaeBNorthern studfishFundulus catenatusA, B, C, DA, BBlackspotted topminnowFundulus olivaceusA, B, C, DA, BWestern mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DBStriped bassMorone saxatilisB, C, DB	Creek chubsucker	Erimyzon oblongus	A, D	В
River redhorse Moxostoma carinatum A, B, Black redhorse Moxostoma duquesnei A, B, C, D, A, B Golden redhorse Moxostoma erythrurum A, B, C, D, A, B Shorthead redhorse Moxostoma macrolepidotum B Blue catfish Ictalurus furcatus A, B, C, D, A, B Black bullhead Ameiurus melas A, B, D, A, B Channel catfish Ictalurus punctatus A, B, D, A, B Channel catfish Ictalurus punctatus A, B, C, D, A, B Slender madtom Noturus albater A, B, C, D, A, B Slender madtom Noturus exilis A, B, C, D, A, B Checkered madtom Noturus flavater A, B, C, D, A, B Flathead catfish Pylodictis olivaris A, B, C, D, A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D, A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D, A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D, B Striped bass Morone saxatilis B, C, D, B	Northern hogsucker	Hypentelium nigricans	A, B, C, D	A, B
Black redhorse Moxostoma duquesnei A, B, C, D A, B Golden redhorse Moxostoma erythrurum A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum B Blue catfish Ictalurus furcatus A Black bullhead Ameiurus melas A Yellow bullhead Ameiurus natalis A, B, D A, B Channel catfish Ictalurus punctatus A, B Ozark madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D Brook silverside Labidesthes sicculus A, B, C, D B Striped bass Morone chrysops A, B, C, D B	Spotted sucker	Minytrema melanops		В
Golden redhorse Moxostoma erythrurum A, B, C, D A, B Shorthead redhorse Moxostoma macrolepidotum B Blue catfish Ictalurus furcatus A B Black bullhead Ameiurus melas A, B, D A, B Yellow bullhead Ameiurus natalis Channel catfish Ictalurus punctatus A, B Ozark madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D B Striped bass Morone chrysops A, B, C, D B	River redhorse	Moxostoma carinatum	A	A, B
Shorthead redhorse Moxostoma macrolepidotum Blue catfish Ictalurus furcatus A B Black bullhead Ameiurus melas A, B, D A, B Channel catfish Ictalurus punctatus Channel catfish Ictalurus punctatus A, B, C, D A, B Slender madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Northern studfish Fundulus catenatus B Northern studfish Fundulus olivaceus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Brook silverside Labidesthes sicculus A, B, C, D B Striped bass Morone saxatilis B, C, D B	Black redhorse	Moxostoma duquesnei	A, B, C, D	A, B
Blue catfish Ictalurus furcatus A B Black bullhead Ameiurus melas Yellow bullhead Ameiurus natalis A, B, D A, B Channel catfish Ictalurus punctatus A, B Ozark madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Golden redhorse	Moxostoma erythrurum	A, B, C, D	A, B
Black bullhead Ameiurus melas A, B, D A, B Yellow bullhead Ameiurus natalis A, B, D A, B Channel catfish Ictalurus punctatus A, B A, B A, B Ozark madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D B Striped bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Shorthead redhorse	Moxostoma macrolepidotum		В
Yellow bullhead Ameiurus natalis A, B, D A, B Channel catfish Ictalurus punctatus A, B A, B Ozark madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D B Striped bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Blue catfish	Ictalurus furcatus	A	В
Channel catfishIctalurus punctatusA, BA, BOzark madtomNoturus albaterA, B, C, DA, BSlender madtomNoturus exilisA, B, C, DA, BCheckered madtomNoturus flavaterA, B, C, DA, BFlathead catfishPylodictis olivarisA, B, C, DA, BOzark cavefishAmblyopsis rosaeBNorthern studfishFundulus catenatusA, B, C, DA, BBlackspotted topminnowFundulus olivaceusA, B, C, DA, BWestern mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DBStriped bassMorone saxatilisB, C, DB	Black bullhead	Ameiurus melas	A	В
Ozark madtom Noturus albater A, B, C, D A, B Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Yellow bullhead	Ameiurus natalis	A, B, D	A, B
Slender madtom Noturus exilis A, B, C, D A, B Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Channel catfish	Ictalurus punctatus	A, B	A, B
Checkered madtom Noturus flavater A, B, C, D A, B Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Ozark madtom	Noturus albater	A, B, C, D	A, B
Flathead catfish Pylodictis olivaris A, B, C, D A, B Ozark cavefish Amblyopsis rosae B Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Slender madtom	Noturus exilis	A, B, C, D	A, B
Ozark cavefishAmblyopsis rosaeBNorthern studfishFundulus catenatusA, B, C, DA, BBlackspotted topminnowFundulus olivaceusA, B, C, DA, BWestern mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DBStriped bassMorone saxatilisB, C, DB		Noturus flavater	A, B, C, D	
Northern studfish Fundulus catenatus A, B, C, D A, B Blackspotted topminnow Fundulus olivaceus A, B, C, D A, B Western mosquitofish Gambusia affinis D B Brook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	Flathead catfish	Pylodictis olivaris	A, B, C, D	A, B
Blackspotted topminnowFundulus olivaceusA, B, C, DA, BWestern mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DBStriped bassMorone saxatilisB, C, DB	Ozark cavefish	Amblyopsis rosae		
Western mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DBStriped bassMorone saxatilisB, C, DB	Northern studfish	Fundulus catenatus	A, B, C, D	A, B
Western mosquitofishGambusia affinisDBBrook silversideLabidesthes sicculusA, B, C, DA, BWhite bassMorone chrysopsA, B, C, DBStriped bassMorone saxatilisB, C, DB	Blackspotted topminnow	Fundulus olivaceus		
Brook silverside Labidesthes sicculus A, B, C, D A, B White bass Morone chrysops A, B, C, D B Striped bass Morone saxatilis B, C, D B	• •	Gambusia affinis		
White bassMorone chrysopsA, B, C, DBStriped bassMorone saxatilisB, C, DB	•	**	A, B, C, D	
Striped bass Morone saxatilis B, C, D B	White bass	Morone chrysops		
		• •		
	=	Perca flavescens		

Table BC01. Fishes (continued).

Common name	Scientific name	MO* status	AR** status
Ozark bass	Ambloplites constellatus	A, B, C, D	A, B
Green sunfish	Lepomis cyanellus	A, B, C, D	A, B
Warmouth	Lepomis gulosus	A, B	В
Orangespotted sunfish	Lepomis humilis		A
Bluegill	Lepomis macrochirus	A, B, D	В
Longear sunfish	Lepomis megalotis	A, B, C, D	A, B
Redear sunfish	Lepomis microlophus		В
Red spotted sunfish	Lepomis miniatus	В	
Spotted sunfish	Lepomis punctatus		В
Smallmouth bass	Micropterus dolomieu	A, B, C, D	A, B
Spotted bass	Micropterus punctulatus	A, B, C, D	A, B
Largemouth bass	Micropterus salmoides	A, B, C, D	A, B
White crappie	Pomoxis annularis	A, B, C, D	В
Black crappie	Pomoxis nigromaculatus	A, B, C, D	В
Greenside darter	Etheostoma blennioides	A, B, C, D	A, B
Rainbow darter	Etheostoma caeruleum	A, B, C, D	A, B
Arkansas saddled darter	Etheostoma euzonum	A, B, D	A, B
Golden fantail darter	Etheostoma flabellare ssp.	A, B, C, D	A, B
Striped fantail darter	Etheostoma f. lineolatum	C	
Yoke darter	Etheostoma juliae	A, B, C, D	A, B
Stippled darter	Etheostoma punctulatum	A, B, C, D	A, B
Orangethroat darter	Etheostoma s. spectabile	A, B, C, D	A, B
Speckled darter	Etheostoma stigmaeum	A, B	A, B
Banded darter	Etheostoma zonale	A, B, D	A, B
Ohio logperch	Percina caprodes	A, B, C, D	A, B
Gilt darter	Percina evides	A	A, B
Blackside darter	Percina maculata		A
Longnose darter	Percina nasuta	A	В
Walleye	Stizostedion vitreum	A, B, C, D	В
Freshwater drum	Aplodinotus grunniens	A, B, C, D	В
Banded sculpin	Cottus carolinae	A, C, D	A, B
Ozark sculpin	Cottus hypselurus	A, B, C, D	В

Missouri status: A=collected before 1946, B=collected between 1946 and 1973,

C=collected from 1974 to 1990, D=collected from 1991-1998.

Arkansas status: A=collected before 1960, B= collected 1960-87.

Source: AR, Robison and Buchanan (1992), and MO, Pflieger (1997).

Table BC02. MDC fish collection summary for the White River watershed by location, date, and method of capture.

Loc. #	Stream name	T R S	Date	K D E I R L	I R			umber specie		
				C A E K G C	S A U P	L	N	В	Н	T
1591	Little North Fork	22N 15W 19	08-23-40	? X		5	15	9	0	29
1592	Little North Fork	23N 15W 18	09-11-64 06-03-97 07-03-98	X X X X	X	6 8	13 10	3 7	1 0	23 25
1593	Pond Fork	23N 16W 15	05-18-63 07-10-97 07-03-98	X X X X	X	0 2	4 4	2 5	0	6 11
1594	Little North Fork	21N 15W 04	06-22-42	? X		3	13	4	0	20
1595	Big Creek	22N 17W 35	08-30-40 09-29-92	? X X X		2 5	10 9	1 5	$_{0}^{0}$	13 19
1596	Shoal Creek	21N 17W 08	08-02-40 07-04-98	? X X X	X	3 2	6 7	4 5	0	13 14
1597	Cowskin Creek	27N 16W 28	08-30-60	X X	X	0	2	3	0	5
1598	Beaver Creek	24N 18W 11	08-20-40 09-19-42	? X		7	12	7	0	26
			07-18-82 09-29-92 07-26-94 05-28-97	X X X X X X	X	3 3 2 4	10 11 2 11	4 10 9 3	0 0 0 0	17 24 13 18
1599	Beaver Creek	23N 19W 15	08-03-40 09-11-64 09-29-92	? X X X X X		9 6 9	15 13 13	12 7 7	0 0 0	36 26 29
1600	Beaver Creek	23N 19W 34	07-19-42	? X		4	6	0	0	10
1601	Roaring River	21N 27W 01	08-07-40 05-29-97 07-13-98	? X X X	X	4 3	8 6	3 5	0	15 14
1602	Roaring River	21N 26W 11	08-24-42	? X		2	2	1	0	5
1603	White River	21N 25W 06	08-07-40	? X		6	12	5	0	23
1604	White River	22N 25W 22	08-07-40 01-01-46	? X X X	X	11 24	13 18	9 17	$0 \\ 0$	33 59
1605	Kings River	22N 25W 36	06-23-42	? X		4	8	6	0	18
1606	Roaring River	21N 26W 09	09-03-65 08-08-95 05-29-97 07-13-98	X X X X X X	X	5 8 6	8 10 9	6 4 6	0 0 0	16 22 21
1607	Kings River	21N 25W 25	09-10-64	X X		9	12	7	0	28

Table BC02. MDC fish collection summary (continued).

Loc.#	Stream name	T R S	Date	K D E V T I R L I R			umber specie		
				C A E S A K G C U P	L	N	В	Н	Т
1608	Bull Creek	25N 20W 31	07-03-75	X X	6	14	6	0	26
			04-16-76 05-15-97 08-06-98	X X X	7	11	6	0	24
1609	Bull Creek	24N 21W 14	04-16-76 07-15-98	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	6 8	8 14	3 6	0	17 28
1610	Bull Creek	24N 21W 34	09-10-64 07-10-97 07-14-98	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	5 7	13 14	7 8	0	25 29
1611	Swan Creek	23N 20W 34	06-20-42 09-10-64	? X X X	1 1	4 3	4 5	0	9 9
1612	White River	23N 20W 33	08-04-40 08-25-42	? X	5	14	6	0	25
			08-23-42	X X	4	11	3	0	18
1613	White River	22N 20W 33	01-01-46	X X X	27	17	16	0	60
1624	Swan Creek	25N 19W 27	08-02-40 09-18-92 05-16-97	? X X X X X X	6 3 1	14 7 3	5 7 2	0 0 0	25 17 6
1625	White River	23N 19W 34	08-04-40	? X	10	13	6	1	30
1626	White River	22N 23W 09	08-05-40	? X	11	11	4	0	26
1627	Indian Creek	22N 24W 35	08-05-40	? X	3	8	7	0	18
1629	Unnamed spring	25N 23W 29	08-06-40	? X	0	5	3	0	8
1707	White River	22N 24W 26	06-24-42	? X	5	9	3	0	17
1975	Roark Creek	23N 22W 23	05-16-82 07-10-97 07-13-98	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	5 6	10 9	4 6	0	19 21
1985	Cane Creek	23N 18W 18	08-03-82 05-28-97 07-04-98	X X X X	6 1	9 9	5 5	0	20 15
1986	Beaver Creek	23N 18W 07	08-03-82 07-04-98	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	5 8	11 12	3 10	0	19 30
2183	Cowskin Creek	27N 16W 33	05-14-86 06-03-97 07-03-98	$\begin{array}{ccc} X & & \\ X & X & & X \end{array}$	0 1	4 7	2 2	0	6 10
2184	Woods Fork	25N 21W 15	04-23-84 05-15-97	$egin{array}{cccc} X & X & X & X & X & X & X & X & X & X $	0	4 3	4 5	0	8 8
2197	Bear Creek	24N 21W 27	03-21-84 07-10-97 07-13-98	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	1 5	7 15	5 4	0 1	13 25

Table BC02. MDC fish collection summary (continued).

Loc. #	Stream name	T R S	Date	K D E V T I R L I R			umber specie		
				C A E S A K G C U P	L	N	В	Н	T
2227	Little North Fork	23N 15W 33	09-29-92	X X	6	11	7	0	24
2234	Cowskin Creek	26N 16W 08	03-04-87 05-20-97 07-03-98	X X X	0 2	4 8	7 3	0	11 13
2314	Barbers Creek	25N 19W 21	09-18-92 05-16-97	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	0	7 3	6	0	13 6
2458	Swan Creek	26N 19W 34	07-27-95 05-16-97	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	5 1	8 2	5 3	$0 \\ 0$	18 6
2506	Bull Creek	25N 20W 08	07-17-82 05-15-97	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	5 3	7 3	2 4	$0 \\ 0$	14 10
2507	Swan Creek	24N 20W 01	05-28-97 07-14-98	X X X	9	13	5	0	27
2508	Swan Creek	24N 20W 10	07-18-82 07-14-98	$egin{array}{cccc} X & X & & & & & & & & & & & & & & & & $	2 6	6 11	3 7	0	11 24
2509	Beaver Creek	25N 17W 27	05-20-97 07-15-98	X X X	3	12	6	0	21
2510	Beaver Creek	26N 17W 24	05-20-97	X X X	1	9	5	0	15
2511	Little Beaver Creek	25N 18W 15	05-20-97	X X X	1	5	5	0	11
2512	Bull Creek	26N 20W 33	07-17-82	X X	0	7	6	0	13

Method of collection: KICK= kick seining, DRAG= drag seining, ELEC= electrofishing, VISU= visual, TRAP= trap netting.

 $\underline{\text{Note}}$: Dates for which no effort or number of species were recorded, have been combined with the samples from the previous date.

Number of species: L= large, N= nektonic, B= benthic, H= hybrid, T= total.

^{*}Indicates locations that were sampled during 1997 that had not been previously sampled.

Table BC03. Fish species by stream from the Missouri portion of the White River watershed (1940-1997).

				LO	CATIO	N*			
Species	WF	BU	SW	BA	LB	BE	CO	CA	RR
Phoxinus erythrogaster	X	X	X	X	X	X	X		X
Luxilus pilsbryi	X	X	X	X	X	X	X	X	X
Notropis telescopus		X	X	X		X	X	X	
Luxilus chrysocephalus		X	X			X		X	X
Notropis rubellus		X	X		X	X	X	X	
Notropis nubilus		X	X			X	X	X	X
Notropis ozarcanus						X			
Cyprinella galactura		X	X			X		X	X
Notropis boops		X	X			X			
Notropis greenei		X	X			X		X	
Notropis amblops		X	X			X			
Campostoma sp.	X	X	X		X	X	X	X	X
Campostoma pullum	X	X	X	X	X	X	X	X	X
Campostoma oligolepis	X	X	X			X	X	X	X
Pimephales notatus						X			X
Semotilus atromaculatus		X	X	X				X	X
Erimystax harryi		X	X			X			
Erimyzon oblongus			X						
Nocomis biguttatus		X	X	X		X	X	X	X
Noturus exilis	X	X	X	X		X	X	X	
Noturus albater		X	X			X			X
Noturus flavater						X			
Ameiurus natalis			X			X			
Ictalurus punctatus						X			
Pylodictis olivaris						X			
Cottus carolinae	X	X	X	X	X	X	X		X
Cottus hypselurus	X	X			X	X			X
Labidesthes sicculus		X				X			X
Percina c. caprodes		X	X			X		X	X
Percina evides						X			
Etheostoma flabellare	X	X	X	X	X		X	X	X
Etheostoma s. spectabile	X	X	X	X	X	X	X	X	X
Etheostoma caeruleum		X	X	X	X	X	X	X	X
Etheostoma juliae		X	X			X			
Etheostoma zonale		X				X		X	
Etheostoma blennoides		X	X			X		X	X
Etheostoma e. euzonum						X			
Etheostoma punctulatum		X		X		X	X		X
Etheostoma f. lineolatum							X		

Table BC03. Fish species by stream (continued).

				LOC	CATIO	N*			
Fundulus catenatus		X	X	X	X	X	X	X	X
Fundulus olivaceus		X	X			X	X	X	X
Species	WF	BU	SW	BA	LB	BE	CO	CA	RR
Gambusia affinis						X			
Lepomis macrochirus		X	X			X	X		X
Lepomis megalotis		X	X			X	X	X	X
Lepomis cyanellus		X	X			X		X	X
Micropterus dolomieui		X	X			X	X	X	X
Micropterus salmoides		X	X			X	X	X	X
Micropterus punctulatus						X	X		X
Ambloplites constellatus		X	X			X		X	
Pomoxis nigromaculatus		X	X						
Hypentelium nigricans		X	X		X	X		X	X
Moxostoma duquesnei		X	X			X			
Moxostoma erythrurum						X			
Catostomus commersoni									X
Lepisosteus osseus						X			
Esox americanus		X	X						
Dorosoma cepedianum						X			
Oncorhynchus mykiss		X							X
Lampetra aepyptera							X		
Carassius auratus			X						

*Location: WF= Woods Fork, BU= Bull Creek, SW= Swan Creek, BA= Barbers Creek, LB= Little Beaver Creek, BE= Beaver Creek, CO= Cowskin Creek, CA= Cane Creek, RR= Roaring River

	LOCATION*								
Species	BI	SH	WR	KR	IN	LN	BR	RO	PF
Phoxinus erythrogaster	'					X	X	X	X
Luxilus pilsbryi	X	X	X	X	X	X	X	X	X
Notropis telescopus	X			X		X	X	X	
Luxilus chrysocephalus			X			X	X	X	
Notropis rubellus			X	X		X		X	
Notropis nubilus	X	X	X	X	X	X	X	X	
Notropis ozarcanus			X			X			
Cyprinella galactura	X	X	X	X	X	X	X	X	
Cyprinella whipplei			X	X					
Notropis boops			X	X		X	X		
Notropis greenei			X	X	X	X	X		
Notropis amblops	X	X	X			X	X		
Campostoma sp.		X					X	X	X

				LO	CATIO	N*			
Campostoma pullum	X	X	X		X	X	X	X	X
Campostoma oligolepis	X		X	X	X	X	X	X	X
Pimephales notatus	X		X	X			X		
Pimephales t. parviceps			X						
Species	BI	SH	WR	KR	IN	LN	BR	RO	PF
Semotilus atromaculatus						X	X	X	
Erimystax harryi			X	X	X				
Nocomis biguttatus	X	X	X		X	X	X	X	X
Notemigonus crysoleucas			X			X			
Cyprinus carpio			X						
Noturus exilis	X	X	X			X	X	X	
Noturus albater			X			X			
Noturus flavater			X						
Ameiurus natalis			X			X			
Ameiurus melas			X						
Ictalurus punctatus			X						
Ictalurus furcatus			X						
Pylodictis olivaris			X						
Cottus carolinae	X	X	X		X	X	X	X	X
Cottus hypselurus						X			
Labidesthes sicculus			X	X		X			
Percina c. caprodes			X	X		X	X		
Percina evides			X	X					
Percina nasuta			X						
Etheostoma flabellare							X	X	
Etheostoma spectabile	X	X	X			X	X	X	X
Etheostoma caeruleum	X	X	X	X	X	X	X	X	X
Etheostoma juliae			X	X	X	X			
Etheostoma zonale			X	X	X	X			
Etheostoma blennoides	X		X	X	X	X	X		
Etheostoma e. euzonum			X		X	X			
Etheostoma punctulatum		X	X			X		X	X
Etheostoma stigmaeum			X	X					
Stizostedion vitreum			X						
Fundulus catenatus	X	X	X	X	X	X	X	X	X
Fundulus olivaceus	X	X	X	X		X	X	X	X
Lepomis macrochirus	X		X	X		X	X	X	
Lepomis megalotis	X	X	X	X	X	X	X	X	X
Lepomis cyanellus		X	X		X	X		X	
Lepomis miniatus						X			
Lepomis gulosus			X						
Micropterus dolomieui	X	X	X	X	X	X	X	X	
Micropterus salmoides	X	X	X	X		X		X	

				LO	CATIO	N*			
Micropterus punctulatus	X		X	X		X			
Ambloplites constellatus			X			X	X	X	
Pomoxis annularis			X						
Pomoxis nigromaculatus			X						
Species	BI	SH	WR	KR	IN	LN	BR	RO	PF
Hypentelium nigricans	X	X	X	X		X	X	X	X
Moxostoma duquesnei			X	X		X			
Moxostoma carinatum			X	X					
Moxostoma erythrurum			X	X					
Catostomus commersoni			X					X	
Carpiodes carpio			X						
Carpiodes cyprinus			X						
Carpiodes velifer			X						
Ictiobus cyprinellus			X						
Lepisosteus osseus			X						
Lepisosteus platostomus			X						
Polyodon spathula			X						
Aplodinotus grunniens			X						
Dorosoma cepedianum			X	X				X	
Dorosoma petenense			X						
Hiodon tergisus			X						
Anguilla rostrata			X						
Ichthyomyzon ammocoete			X						
Erimyzon oblongus						X			

^{*}Location: BI= Big Creek, SH= Shoal Creek, WR= White River, KR= Kings River,

IN= Indian Creek, LN= Little North Fork, BR= Bear Creek, RO= Roark Creek, PF= Pond Fork

Table BC04. Mussels and snails of the White River watershed.

Scientific name Genus species	Common name	MO* status	AR** status
Actinonaias ligamentina carinata	Mucket	A	D
Alasmidonta viridis	Slippershell mussel	A	
Amblema plicata	Threeridge	A,B^2	D
Antrobia culveri	Tumbling Creek cavesnail	C	
Campeloma subsolidum	Highland campeloma		D
Cyclonaias tuberculata	Purple wartyback	A	D
Cyprogenia aberti	Western fanshell	A	D
Elimia potosiensis	Pyramid elimia	C	D
Ellipsaria lineolata	Butterfly	A	
Elliptio crassidens	Elephant ear	A	
Elliptio dilatata	Spike	A	D
Epioblasma florentina curtisi	Curtis pearlymussel	A	
Ferrissia rivularis	Creeping ancylid		D
Fusconaia flava	Wabash pigtoe	A	D
Fusconaia ozarkensis	Ozark pigtoe	A,B	D
Fusconaia ebena	Ebonyshell	A	
Helisoma trivolvis	Marsh ramshorn	C	D
Laevapex sp.			D
Lampsilis reeviana brevicula	Ozark broken-ray	A,B	D
Lampsilis reeviana reeviana	Arkansas broken-ray		D
Lampsilis cardium	Plain pocketbook	A,B	D
Lampsilis siliquoidia	Fatmucket	A,B^1	D
Lampsilis rafinesqueana	Neosho mucket	A	
Lampsilis teres	Yellow sandshell	A	
Lampsilis abrupta	Pink mucket	A	
Lasmigona costata	Fluted-shell	A	D
Leptodea fragilis	Fragile papershell	\mathbf{B}^2	D
Leptodea leptodon	Scaleshell	A	
Ligumia subrostrata	Pondmussel		D
Ligumia recta	Black sandshell	A	D
Lymnaea (Fossaria) modicella	Rock fossaria	C	
Obliquaria reflexa	Threehorn wartyback	A	

Table BC04. Mussels and snails (continued).

Scientific name Genus species	Common name	MO* status	AR** status
Obovaria olivaria	Hickorynut	A	
Physa (Physella) heterostropha	Pewter physa	C	
Physa (Physella) gyrina	Tadpole physa	С	D
Physa (Physodon) anatina	Duck physa	C	
Pleurobema sintoxia	Round pigtoe	A	D
Pleurobema cordatum	Ohio pigtoe		D
Pleurocera acuta	Sharp hornsnail	C	
Pomatiopsis lapidaria	Slender walker	C	
Potamilus purpuratus	Bleaufer	A,B^2	D
Ptychobranchus occidentalis	Ouchita kidneyshell	A,B	D
Pyganodon grandis grandis	Giant floater	\mathbf{B}^1	D
Quadrula cylindrica cylindrica	Rabbitsfoot	A	D
Quadrula pustulosa	Pimpleback	A	
Quadrula nodulata	Wartyback	A	
Somatogyrus sp.	Pebblesnail		D
Sphaerium sp.	Fingernail clam		D
Strophitus undulatus	Squawfoot	A,B	D
Toxolasma parvus	Lilliput	A	D
Toxolasma lividus	Purple lilliput	A,B	D
Tritogonia verrucosa	Pistol grip	A	D
Truncilla donaciformis	Fawnsfoot	A	
Truncilla truncata	Deer-toe	\mathbf{B}^2	
Uniomerus tetralasmus	Pondhorn		D
Utterbackia imbecillis	Paper pondshell	A,B^2	D
Venustaconcha pleasi	Bleedingtooth mussel		D
Villosa iris	Rainbow	A,B	
Villosa lienosa	Little spectaclecase	A	

^{*}A=collected prior to 1920, B=collected after 1981, C=collected in 1982

Source: Oesch (1996), Buchanan (1996), Gordon (1980; 1982), Gordon, Oesch, and Wu (1997), Roberts, A., USFWS, pers. comm., and Barnhart, C., Southwest Missouri State University, pers. comm.

^{**}D=all Arkansas collections were made between 1978 and 1981.

¹=observations from divers in Table Rock Lake

²=observations by divers in Bull Shoals Lake.

Table BC05. Crayfish found in the Missouri portion of the White River watershed.

Scientific name	Common name	Period last collected*
Cambarus hubbsi	Hubb's crayfish	В
Orconectes longidigitus	Longpincered crayfish	A, B
Orconectes meeki	Meek's crayfish	В
Orconectes neglectus	Ringed crayfish	A, B
Orconectes ozarkae	Ozark crayfish	A ,B
Orconectes punctimanus	Spothanded crayfish	В
Orconectes virilis	Northern crayfish	A, B
Orconectes williamsi	Williams' crayfish	В

^{*} A=collected prior to 1970, B=collected after 1970

Source: Pflieger (1996).

Table BC06. Aquatic invertebrates in the Missouri portion of the White River watershed.

Order Family	Family	Species		LO	CAT	ION*	<
			1	2	3	4	5
Plecoptera	Nemouridae				X		
		Nemoura sp.	X	X	X		
		Brachyptera sp.					
		Strophopteryx fasciata			X		
		Taeniopteryx sp.	X				
		Paracapnia sp.	X	X	X		
		Paragnetina sp.		X			
		Perlomyia sp.		X			
		Acroneuria sp.			X		
		Acroneuria arida		X	X		
		Acroneuria frisoni				X	
		Perlesta placida			X		
		Perlesta sp.	X	X	X		
		Isogenus sp.	X	X	X		
		Isoperla sp.			X		
		Isoperla bilineata/richardsoni	X	X	X		
		Isoperla maylynia	X	X	X		
		Isoperla signata				X	
		Isoperla mohri frison			X		
		Isoperla namata				X	
		Isoperla ouachita				X	
		Paraperla sp.	X	X	X		
		Alloperla sp.				X	

Table BC06. Aquatic invertebrates (continued).

Order	Family	Species		LOC	CAT	ION*	:
			1	2	3	4	5
		Amphinemura sp.	.,			X	Χ
	Chloroperlidae				X		
		Neoperla sp.				X	
	Leuctridae					X	Σ
		Leucrocuta sp.				X	7
		Zealuctra sp.				X	
	Perlidae					X	
		Hydroperla sp.			X		
		Perlinella		X			
Ephemeroptera		Acentrella sp.			X		
		Serratella sp.		X			
		Eurylophella (bicolor gp.)			X		
	Baetidae	Baetis sp.	X	X	X	X	2
		Baetis flavistriga					2
		Baetis tricaudatus					2
		Pseudocloeon sp.	X	X	X		
		Ephemera					2
		Stenacron sp.				X	2
		Stenacron (interpunctatum gp.)			X		
		Stenacron gildersleevei		X			
	Heptageniidae						2
		Stenonema pulchellum	X	X	X	X	
		Stenonema nepotellum	X	X	X		
		Heptagenia sp.		X	X		
		Stenonema tripunctatum		X	X		
		Stenonema interpunctatum	ļ	X	X		
		Stenonema gildersleevei		X	X	37	,
		Stenonema mediopunctatum			X	X	
		Stenonema vicarium				X	
		Stenonema bednariki		37		X	
		Stenonema (undescribed sp.)		X	v	X	
	C' 11 '1.	Rhithrogena sp.	37	37	X		
	Siphlonuridae	Isonychia sp.	X	X	X	37	
		Isonychia bicolor	37			X	
		Siphlonurus sp.	X			v	
	F 1 11:1.	Siphlonurus minnoi			37	X	
	Ephemerellidae	Ephemerella (bicolor gp.)		v	X	v	
		Ephemerella (invaria gp.)		X	X	X	
	T 11 1 " 1	Ephemerella (serrata gp.)	37	X	X	*7	
	Leptophlebiidae	Paraleptophlebia sp.	X	X	X	X	7
		Leptophlebia sp.	***	X	X	X	
	m i di iid	Choroterpes sp.	X	X	77	X	
	Tricorythodidae	Tricorythodes sp.	X	X	X	X	
	Caenidae	Caenis sp.	X	X	X	X	
		Caenis anceps				X	

Table BC06. Aquatic invertebrates (continued).

Order	Family	Species	LOCATION*				
			1	2	3	4 5	
		Caenis latipennis				X	
Trichoptera	Glossosomatidae	Agapetus sp.	X	X	X	X	
_	Hydropsychidae	Cheumatopsyche sp.	X	X	X		
		Hydropsyche (bifida gp.)	X	X	X		
		Hydropsyche (morosa gp.)			X		
		Hydropsyche piatrix			X		
	Brachycentridae	Brachycentrus sp.	X	X	X		
	•	Brachycentrus americanus			X		
	Ryacophilidae	Ž			X		
	,	Rhyacophila sp.	X	X	X		
	Psychomyiidae	Polycentropus sp.	X	X	X		
	Helicopsychidae	Helicopsyche sp.		X	X		
	Tiencopsychiade	Helicopsyche borealis		21	X		
	Philopotamidae	Chimarra aterrima	X	X	X		
	1 imopotamicae	Chimarra obscura	X	X	X		
		Chimarra sp.	Λ	1	71		
	Hydroptilidae	Agraylea sp.	X	X			
	Limnophilidae	Caborius sp.	X	Λ			
	Libellulidae	Somatochlora ozarkensis	X				
	Libellulidae	other Libellulids	X				
	Lestidae		X				
	Lestituae	Archilestis sp.	X				
	0 11	other Lestidae					
	Coenagrionidae	Telebasis/Enallagma	X	37			
	0 111	other Coenagrionids	X	X	***		
	Gomphidae	TT 1		X	X	**	
	Odontoceridae	Hydroptila sp.				X	
		Ironquia sp.				X	
		Lepidostoma sp.				X	
		Mystacides sp.				X	
		Pycnopsyche				X	
		Triaenodes sp.				X	
	Leptoceridae	Oecetis sp.				X	
	Psychomyiinae	Psychomyia sp.					
	Polycentropodinae	Polycentropus sp.					
Coleoptera	Elmidae	Optioservus sp.	X	X	X	X	
		Optioservus sandersoni collier			X		
		Stenelmis sp.	X	X	X	X	
		Elimia				X	
		Dubiraphia sp.				X	
		Machronychus glabratus				X	
	Psephenidae	Psephenus sp.	X	X	X	X	
		Psephenus herriki			X	X	
		Ectopria sp.			X	X	
					37	37	
		Ectopria nervosa			X	X	

Table BC06. Aquatic invertebrates (continued).

Order	Family	Species		LOCATION*					
			1	2	3	4	5		
	Haliplidae	Peltodytes edenti	X						
	Dytiscidae				X				
		Laccophilus fasciatus	X						
		Laccophilus maculosus	X						
		Laccophilus proximus	X						
		Laccophilus sp.				X			
		Oreodytes/Deronectes	X						
		Hydroporus niger	X		X				
		Hydroporus undulatus	X		X				
		Hydroporus sp.				X			
		Dytiscus sp.	X						
		Eretes sp.			X				
		other Dytiscids	X						
	Hydrophilidae				X				
		Berosus sp.	X						
		Tropisternus sp.	X						
		Helochares sp.	X						
		other Hydrophilids	X		X				
	Dryopidae	Helichus sp.				X			
		Lutrochus laticeps.				X			
	Limnebiidae	Hydraena sp.				X	X		
	Helodidae	Scirtes sp.				X	X		
	Gyrinidae	Gyrinus sp.				X			
	Salpingidae					X			
	Sphaeriidae	Spaerium sp.					X		
Odonata					X				
	Gomphidae			X					
		Perithemis sp.	X						
		Argia sp.	X			X			
		Stylogomphus albistylus				X	X		
	Aeshnidae	Basiaeschna sp.				X			
		Boyeria sp.				X	X		
		Gomphus sp.				X			
		Hagenius brevistylus				X			
	Macromiidae	Macromia sp.				X			
Zygoptera	Calopterygidae	Calopteryx maculata				X			
		Calopteryx sp.					X		
		Hetaerina sp.					X		
	Coenagrionidae	Enallagma sp.					X		
Diptera	Chironomidae		X	X	X				
•		Labrudia sp.					X		
		Zavrelimyia sp.					X		
	Chironominae	Ablabesmyia sp.				X			
		Procladius sp.				X			
		4							

Table BC06. Aquatic invertebrates (continued).

Order	Family	Species	LOCATION*				
			1	2	3	4	5
		Dicrotendipes sp.	,			X	
		Paratendipes sp.				X	X
		Polypedilum convitum grp.				X	X
		Polypedilum fallax grp.				X	
		Polypedilum illinoense grp.				X	X
		Polypedilum scalaenum grp.				X	X
		Stictochironomus sp.				X	
		Stenochironomus sp.					X
		Cladotanytarsus sp.				X	X
		Tribelos sp.				X	
		Micropsectra sp.				X	X
		Paratanytarsus				X	X
		Rheotanytarsus sp.				X	X
		Corynoneura sp.				X	X
		Eukiefferiella				X	X
						X	X
		Cricotopus/Othrocladius					Λ
		Hydrobaenus				X	
		Potthastia sp.				X	**
		Sympotthastia sp.				X	X
		Microtendipes sp.				X	X
		Chironomus sp.					X
	Empididae		X	X	X	X	
		Hemerodromia sp.				X	
		Clinocera sp.				X	
	Simuliidae		X	X	X		
		Simulium sp.				X	X
	Tanyderidae	Protoplasa sp.			X		
		Protoplasa fitchii osten-sacken			X		
	Tabanidae	· · ·			X		
		Chrysops/Tabanus	X	X	X	X	
	Rhagionidae	Atherix sp.	X	X	X		
	8	Atherix lantha webb			X		
	Ceratopogonidae	Table W William Weed			X	X	X
	cerutopogomate	Bezzia/Probezzia	X	X		11	
		Ceratopigonid pupae	X	X			
	Ceratopogoninae	сегиюрідоній ририс	71				X
	Culicidae	Anophles sp.		X			
		other Culicids	X				
		Culex sp.	X				
	Chaoboridae	curen sp.	X				
	Tipulidae		Λ	X			
	1 ipunuae	Tipula sp.	X	X	X		
							v
		Eriocera/Hexatoma	X	X	X		X
		Antocha sp.	X		X		
		Erioptera sp.	X				

Table BC06. Aquatic invertebrates (continued).

Order	Family	Species		LOCATION*				
			1	2	3	4	5	
	Muscidae		X		X			
	Psychodidae	Psychoda sp.	X					
		Pericoma sp.	X					
	Stratiomyidae				X			
		Nemotelus				X		
	Diamesinae	Diamesa sp.				X		
	Pentaneurini	Nilotanypus sp.				X		
		Paramerina sp.				X	X	
		Thienemannimyia grp.				X	X	
	Tanytarsini	Stempellinella sp.				X	X	
		Tanytarsus sp.				X	X	
	Orthocladiinae	Orthocladius sp.				X	X	
		Parametriocnemus sp.				X		
		Rheocricotopus sp.				X		
		Thienemanniella sp.				X		
		Brillia sp.					X	
		Cardiocladius sp.					X	
	F 1 111	Synorthocladius sp.					X	
	Ephydridae	D: 11					X	
	Dixidae	Dixella sp.					X	
	Forcipomyiinae			**	**		X	
Megaloptera	Corydalidae	Corydalus sp.		X	X		X	
		Corydalus cornutus			X			
		Nigronia sp.		37	X	37	**	
	C' 1' 1	Nigornia serricornis		X		X		
T 11 .	Sialidae	Sialis sp.	37	X		X	X	
Lepidoptera	G 11	T. 1 .	X					
Hemiptera	Gerridae	Trepobates sp.	X					
	M 1'' 1.	other Gerrids	X					
	Mesoveliidae	Mesovelia sp.	X					
	Corixidae Veliidae		X		v			
	veindae	Mianavalia an	X		X X		X	
		Microvelia sp. Rhagovelia sp.	Λ	v	Λ		Λ	
		other Veliids	X	X				
	Notonectidae	other venius	X					
	Saldidae		X					
	Belostomatidae	Belostoma sp.	Λ				X	
	Delostomatidae	<i>Беюмона sp.</i>	X	X	X		Δ	
	Branchiobdellidae		21	X	X		X	
Haplotaxida	Enchytraeidae			41	41	X		
Тиртошлиш	Glossoscolecidae	Limnodrilus sp.				X		
	Giossoscoiccidac	Limnodritus sp. Limnodrilus augustinpennis				X		
		Limnodritus dagastaipentas Limnodrilus hoffmeisteri				X		
		zamourus nojjineisieri				X		

Order	Family	Species		LO	CAT	NOI	k
			1	2	3	4	5
	Lumbricidae		ı				X
			X				
Acari				X	X		
Amphipoda	Gammuridae	Gammarus sp.	X		X	X	X
		Gammarus fasciatus say			X		
		Crangonyx sp.				X	X
		Stygonectes/Sttygobromus				X	
	Talitridae	Hyalella azteca				X	X
Isopoda		Asellus sp.	X				
_		Lirceus sp.	X			X	X
Gastropoda	Pleuroceridae	Helisoma sp.				X	
•	Planariidae	_	X	X	X	X	X
			X		X		
Gordiida			X				
	Physidae	Physa sp.	X	X			
	Ancylidae	•				X	
	•	Ferrissia sp.	X	X		X	X
	Planorbidae	•	X	X		X	
	Valvatidae	Valvata sp.	X				
	Pleuroceridae	Goniobasis sp.	X		X		
	Sphaeriidae	•	X				
Branchiura	1	Branchuiura sowerbyi				X	

Location*: 1= Prairie Creek, 2= Cowskin Creek, 3= Beaver Creek, 4= Bull Creek, 5= Roaring River. Source: Duchrow (1976; 1978), MDNR (1998c) and MDC (1998).

Table BC07. Amphibians and reptiles found in the Missouri portion of the White River watershed.

Scientific Name	Common Name	County*
Acris crepitans blanchardi	Blanchard's cricket frog	ALL
Agkistrodon contortix phaeogaster	Osage copperhead	B, C, D, O, S, T, WE
Agkistrodon piscivorus leucostoma	Western cottonmouth	C, O, S
Ambystoma annulatum	Ringed salamander	C, O, S, T
Ambystoma maculatum	Spotted salamander	B, C, S, T
Ambystoma t. tigrinum	Eastern tiger salamander	B, T
Bufo americanus	Eastern American toad	ALL
Bufo woodhousei	Woodhouse's toad	В
Carphophis amoenus vermis	Western worm snake	ALL
Cemophora coccinea copei	Northern scarlet snake	S
Chelydra s. serpentina	Common snapping turtle	B, O, S
Chrysemys picta bellii	Western painted turtle	O
Cnemidophorus sexlineatus	Six-lined racerunner	ALL
Coluber constrictor flaviventris	Eastern yellowbelly racer	B, D, O, S, T, WE, WR
Crotalus horridus	Timber rattlesnake	B, C, D, S
Crotaphytus c. collaris	Eastern collard lizard	B, C, O, S, T
Diadophis punctatus arnyi	Prairie ringneck snake	B, C, D, O, S, T, WR
Elaphe guttata emoryi	Great plains rat snake	B, C, O, S, T, WR
Elaphe o. obsoleta	Black rat snake	ALL
Eumeces anthracinus pluvialis	Southern coal skink	ALL
Eumeces fasciatus	Five-lined skink	ALL
Eumeces laticeps	Broadhead skink	B, S
Eurycea longicauda	Longtail salamander	B, C, D, O, S, T, WR
Eurycea lucifuga	Cave salamander	B, C, D, O, S, T, WR
Eurycea multiplicata griseogaster	Graybelly salamander	B, C, S, T
Eurycea tynerensis	Oklahoma salamander	B, S, T
Gastrophryne carolinensis	Eastern narrowmouth toad	B, C, O, S, T
Graptemys geographica	Map turtle	B, C, D, O, S, WE, WR
Graptemys p. pseudogeographica	False map turtle	S
Heterodon platyrhinos	Eastern hog snake	B, C, O, S, T, WR
Hyla chrysoscelis	Gray treefrog	B, D, T
Hyla crucifer crucifer	Northern spring peeper	B, D, O, S, T
Kinosternon flavescens	Yellow mud turtle	В
Lampropeltis c. calligaster	Prairie kingsnake	B, S, T
Lampropeltis getulus holbrooki	Speckled kingsnake	B, C, O, S, T
Lampropeltis triangulum syspila	Red milk snake	B, C, O, S, T, WE
Macroclemys temminckii	Alligator snapping turtle	T
Masticophis f. flagellum	Eastern coachwhip	B, O, S, T, WE
Necturus maculosus	Mudpuppy	C, D, O, S

Table BC07. Amphibians and reptiles (continued).

Scientific Name	Common Name	County*
Nerodia erythrogaster flavigaster	Yellowbelly water snake	S
Nerodia s. sipedon	Northern watersnake	B, C, O, S, T, WE, WR
Notophthalmus viridescens louisianensis	Central newt	B, C, D, O, S
Opheodrys aestivus	Rough green snake	ALL
Ophisaurus a. attenuatus	Western slender glass lizard	S
Phrynosoma cornutum	Texas horned lizard	В
Pituophis melanoleucus sayi	Bullsnake	B, S, T, WR
Plethodon dorsalis angusticlavius	Ozark zigzag salamander	B, C, D, O, S, T
Plethodon g. glutinosus	Slimy salamander	ALL
Pseudacris triseriata	Western chorus frog	B, C, O, T
Pseudemys concinna metteri	Missouri river cooter	O, S
Rana catesbeiana	Bullfrog	ALL
Rana clamitans	Green frog	B, C, D, S, T
Rana palustris	Pickerel frog	ALL
Rana spenocephala	Southern leopard frog	ALL
Rana sylvatica	Wood frog	B, S
Sceloporus undulatus hyacinthinus	Northern fence lizard	ALL
Scincella lateralis	Ground skink	ALL
Sistrurus miliarius streckeri	Western pygmy rattlesnake	B, C, D, O, S, T
Sonora semiannulata	Ground snake	C, O, S, T
Sternotherus odoratus	Stinkpot	O, WE, WR
Storeria dekayi wrightorum	Midland brown snake	B, D, O, S, T, WE
Storeria o. occipitomaculata	Northern redbelly snake	ALL
Tantilla gracilis	Flathead snake	B, C, O, S, T, O, WR
Terrapene carolina triunguis	Three-toed box turtle	ALL
Terrapene o. ornata	Ornate box turtle	B, C, WE
Thamnophis p. proximus	Western ribbon snake	C, S, T, WE, WR
Thamnophis s. sirtalis	Eastern garter snake	C, D, S
Trachemys scripta elegans	Red-eared slider	O, S
Trionyx m. muticus	Midland smooth softshell	S
Trionyx s. spinifer	Eastern spiny softshell	D, O, S, T
Typhlotriton spelaeus	Grotto salamander	B, C, D, O, S, T, WR
Virginia striatula	Rough earth snake	B, C, D, O, S, T
Virginia valeriae elegans	Western earth snake	ALL

^{*}Collections indicate presence at the county level.

B= Barry, C= Christian, D= Douglas, O= Ozark, S= Stone, T= Taney, WE= Webster, WR= Wright, ALL= All counties Source: Johnson (1997).

Table BC08. Species of conservation concern in the White River watershed.

Scientific name	Common name	MO* rank	AR* rank	Federal* rank
MOSSES				
Bryum cyclophyllum	a moss	S?		
Diacranum polysetum	a moss	S 1		
Didymodon rigidulus	a moss	S 1		
Ephemerum cohaerens	Emerald dewdrops	S1		
Fontinalis sphagnifolia	a moss	S 1		
Forsstroemia producta	a moss	S1		
Pseudotaxiphyllum distichaceum	a moss	S?		
Seligeria calcarea	a moss	S?		
Tortula papillosa	a moss	S?		
<u>FERNS</u>				
Cheilanthes alabamensis	Alabama lip-fern	S 1		
FLOWERING PLANTS				
Acer nigrum	Black maple		S 1	
Agalinis skinneriana	a false foxglove	S 3		
Allium stellatum	Glade onion		S 2	
Amorpha canescens	Leadplant		S2	
Asclepias incarnata	Swamp milkweed		S 2	
Aster furcatus	Forked aster	S2		
Astragalus crassicarpus	Ground plum		S2	
Astranthium integrifolium	Western daisy	S2		
Brickellia grandiflora	Tassel flower		S 2	
Callicarpa americana	French mulberry	S 1		
Callirhoe bushii	Bush's poppy mallow	S2	S 3	
Carex aquatilis var. aquatilis	Water sedge	S 1		
Carex bicknellii var. opaca	a sedge		S 2	
Carex cherokeensis	Cherokee sedge	S2		
Carex crawei	Crawe's sedge		S 3	
Carex hystericina	Porcupine sedge		S4	
Carex laxiculmis	Spreading sedge	S2		
Carex microdonta	a sedge		S 1	
Carex prasina	Drooping sedge		S 1	
Carex stricta	Upright sedge		S 1	
Carex suberecta	a sedge		S 2	
Castanea pumila var. ozarkensis	Ozark chinquapin	S2	S 3	
Chaetopappa asteroides	Common leastdaisy	S2		
Cissus incisa	Marine vine	S2		
Collinsia verna	Spring blue-eyed mary		S1	

Table BC08. Species of conservation concern (continued).

Scientific name	Common name	MO* rank	AR* rank	Federal* rank
Cypripedium kentuckiense	Southern lady's-slipper		S3	
FLOWERING PLANTS (continued)				
Delphinium treleasei	Trelease's larkspur		S 3	
Desmodium cuspidatum	Tick-treefoil		SU	
Echinacea paradoxa	Bush's yellow coneflower		S 2	
Echinacea angustifolia	Narrow-leaved coneflower	S 1		
Eriocaulon kornickianum	Small-headed pipewort		S2	
Eriogonum longifolium	Umbrella plant	S2		
Euonymus obovatus	Running strawberry-bush		S 3	
Evolvulus nuttallianus	an evolvulus		S 3	
Fragaria vesca var. americana	Woodland strawberry	S 1		
Gentiana puberulenta	Downy gentain		S2	
Glyceria acutiflora	Sharp-scaled manna grass	S 3		
Heuchera villosa var. arkansana	Arkansas alumroot		S 3	
Hottonia inflata	Featherfoil	S2		
Juniperus ashei	Ashe's juniper		S 3	
Leavenworthia uniflora	a leavenworthia		S 3	
Liatris scariosa var. nieuwlandii	a blazing star	S2		
Lilium superbum	Turk's-cap lily		S 1	
Lithospermum incisum	Narrow-leaved puccoon		S2	
Marshallia caespitosa var. signata	Marshallia	S 1	S2	
Mentha arvensis	Field mint		S 1	
Minuartia drummondii	Drummond's sandwort		S2	
Minuartia michauxii	Rock sandwort		S 1	
Muhlenbergia bushii	Bush's muhly		S2	
Opuntia macrorhiza	Low prickly pear	S2		
Orobanche ludoviciana	a broomrape	S 1		
Panicum portoricense	a panic grass	S 1		
Penstemon cobaea var. purporea	Purple beardtongue		S 3	
Perideridia americana	Perideridia		S2	
Phlox bifida ssp. stellaria	Bifid phlox	S 1		
Phlox bibida ssp. bifida	Sand phlox		S 3	
Phyllanthus polygonoides	Knotweed leaf-flower	S 1	S 1	
Plantago cordata	Heart-leaved plantain		S2	
Platanthera clavellata	Green wood orchid	S2		
Psoralea esculenta	Indian scurf-pea		S2	
Rhynchospora capillacea	Capillary beak rush		S2	
Salvia reflexa	Lance-leaved sage		SH	
Sapindus drummondii	Soapberry	S2		

Table BC08. Species of conservation concern (continued).

Silene regia Royal catchfly \$2 Silene ovata Ovate-leaf catchfly \$2 Smilacina stellata Starry false solomon's seal \$1 FLOWERING PLANTS (continued) Spiranthes odorata Sweetscent ladies'-tresses \$1 Sporobolus airoides Alkali sacaton \$1 Sporobolus airoides Alkali sacaton \$1 Stenosiphon linifolius Stenosiphon \$2 \$1 Stenosiphon linifolius Stenosiphon \$2 \$1 Stylophorum diphyllum Celandine poppy \$1 \$1 Tradescantia ozarkana Ozark spiderwort \$2 \$2 Tragia ramosa a noseburn \$2 \$1 \$2 Trigloium stoloniferum Running buffalo clover \$1 \$2 \$3 \$3 Trijolium pusillum Ozark wake robin \$2 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 \$3 <th>Scientific name</th> <th>Common name</th> <th>MO* rank</th> <th>AR* rank</th> <th>Federal* rank</th>	Scientific name	Common name	MO* rank	AR* rank	Federal* rank
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Pseudosinella espanaa springtailS3Rhadine ozarkensisa ground beetleS1Speyeria dianaDiana fritillarySUCRUSTACEANSS1Caecidotea ancylaan isopodS1Caecidotea steevesian isopodS1Caecidotea stiladactylaan isopodS1Oroconectes meekiMeek's crayfishS1	• •	a leaf beetle	S 3		
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Caecidotea steevesian isopodS1Caecidotea stiladactylaan isopodS1Oroconectes meekiMeek's crayfishS1		an isopod		S 1	
Caecidotea stiladactyla an isopod S1 Oroconectes meeki Meek's crayfish S1	-	•			
Oroconectes meeki Meek's crayfish S1		-			
·	•	•	S 1	<i>5</i> 1	
	Oroconectes williamsi	William's crayfish	S1		

Table BC08. Species of conservation concern (continued).

Scientific name	Common name	MO* rank	AR* rank	Federal* rank
CRUSTACEANS (continued)				
Stygobromus ozarkensis	Ozark cave amphipod	S 3		
<u>MILLIPEDES</u>				
Scoterpes dendropus	a cave millipede	S2?		
MOLLUSKS				
Antrobia culveri	Tumbling Creek cavesnail	S 1		C
Toxolasma lividus	Purple lilliput	S2?		
<u>AMPHIBIANS</u>				
Ambystoma annulatum	Ringed salamander	S 3	S 4	
Bassariscus astutus	Ringtail		SA	
Rana sylvatica	Wood frog	S 3	S 4	
REPTILES				
Cemophora coccinea copei	Northern scarlet snake	S2		
Crotaphytus collaris collaris	Eastern collared lizard	S4		
Eumeces obsoletus	Great plains skink		S 1	
Macroclemys temminckii	Alligator snapping turtle	S2		
Phrynosoma cornutum	Texas horned lizard	S2		
Terrapene ornata ornata	Ornate box turtle		S2	
Thamnophis radix	Plains garter snake		S 1	
<u>FISH</u>				
Amblyopsis rosae	Ozark cavefish		S 1	T
Carpiodes velifer	Highfin carpsucker	S2		
Crystallaria asprella	Crystal darter		S2	
Cyprinella camura	Bluntface shiner		SH	
Lampetra appendix	American brook lamprey		S 2	
Notropis ozarkanus	Ozark shiner	S2		
Noturus flavater	Checkered madtom	S 3		
Percina nasuta	Longnose darter	S 1	S 2	
Pimephales tenellus parviceps	Eastern slim minnow	S2		
BIRDS				
Accipter cooperii	Cooper's hawk	S 3		
Accipter striatus	Sharp-shinned hawk	S 2		
Aimophila aestivalis	Bachman's sparrow	S 1		
Ammodramus savannarum	Grasshopper sparrow		S 3	
Ardea herodias	Great blue heron	S5	S 3	

Table BC08. Species of conservation concern found in the White River watershed.

Scientific name	Common name	MO* rank	AR* rank	Federal* rank
Coragyps atratus	Black vulture	S 3		
Geococcyx californianus	Greater roadrunner	S3		
Haliaeetus leucocephalus	Bald eagle	S2	S2	T
Limnothlypis swainsonii	Swainson's warbler	S 1	S 3	E
Thryomanes bewickii	Bewick's wren		S2	
Vermivora pinus	Blue-winged warbler		S 3	
MAMMALS				
Corynorhinus rafinesquii	Rafinesque's big-eared bat		S2	
Corynorhinus townsendii ingens	Ozark big-eared bat		S 1	E
Felis concolor coryi	Florida panther		S 1	E
Mustela frenata	Long-tailed weasel	S2		
Myotis grisescens	Gray myotis	S 3	S2	E
Myotis leibii	Eastern small-footed myotis	SU		
Myotis sodalis	Indiana myotis	S 1	S2	E
Sorex longirostris	Southeastern shrew		S 2	
Spilogale putorius interrupta	Plains spotted skunk	S 1		
Ursus americanus	Black bear	S 3		
Vulpes vulpes	Red fox		S4	

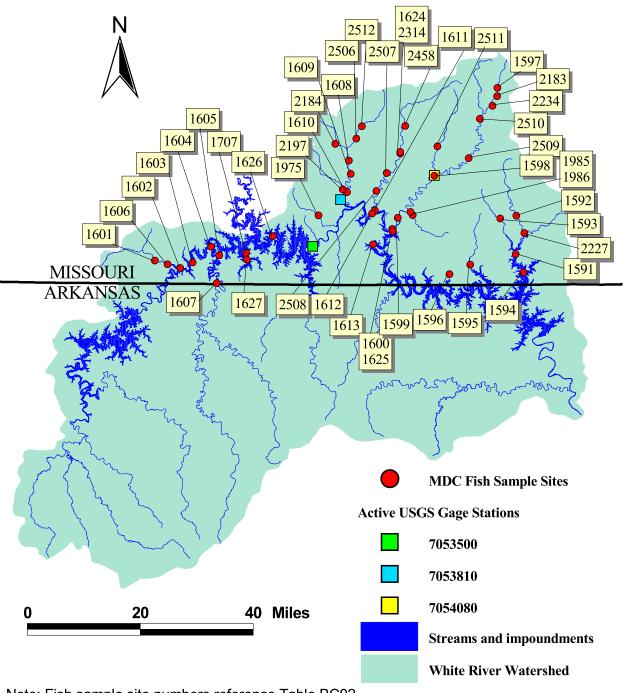
^{*}Federal listings -C= candidate, T= threatened, E= endangered.

<u>Note</u>: State rank indicates that a particular species occurs in that state's portion to the watershed. Some species only ranked by one state in the table may be ranked in the other state, but are not known to occur in that state's portion of the watershed.

Source: Missouri Department of Conservation (1998), Arkansas Natural Heritage Commission (1997).

^{*}Missouri and Arkansas listings- S1= critically imperiled because of extreme rarity and especially vulnerable to extirpation from the state, S2= imperiled because of rarity making it vulnerable to extirpation from the state, S3= rare and uncommon in the state, S4= widespread, abundant, and secure in the state, with many occurrences, but under long-term concern, SA= accidental, SU= unrankable, possibly in peril, but status uncertain, SH= historical, element occurred historically with expectation that it may be rediscovered, S?= unranked.

Figure BC01. MDC fish sample sites and active USGS gage stations in the Missouri portion of the White River watershed.



Note: Fish sample site numbers reference Table BC02 and USGS gage station numbers reference Table HY01.